Water Resources Survey

Part I:

HISTORY OF LAND AND WATER USE ON IRRIGATED AREAS

Rosebud County, Montana

Published by
STATE ENGINEER'S OFFICE
Helena, Montana, July, 1948

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MONTANA

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STATE ENGINEER'S OFFICE

State Engineer ..... Fred E. Buck

Assistant ..... Gerald J. Oravetz

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MONTANA STATE AGRICULTURAL EXPERIMENT STATION

O. W. Monson ..... Irrigation Engineer and Consultant

July, 1948

Hon. Sam C. Ford
Capitol Building
Helena, Montana

Dear Governor Ford:

Submitted herewith is a consolidated report on the Water Resources Survey of Rosebud County, Montana. This work is being carried on by funds made available to the State Engineer by the Thirtieth Legislative Session, 1947, and in cooperation with the State Water Conservation Board.

The report is divided into two booklets—part one consisting of the history of land and water use, irrigated lands, water rights, etc., while part two contains all of the township maps showing in color the lands irrigated from each canal.

The office files contain minute descriptions and details of each individual water right, water and land use, etc., which are too voluminous to be included herein. These office files are available for inspection to those who are interested.

Mr. Gerald J. Oravetz, Assistant State Engineer, has directed the detail office and field work of this project and is entitled to much credit for the excellent accomplishment.

Respectfully submitted,

FRED E. BUCK, State Engineer

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ACKNOWLEDGMENTS

A survey and study of water resources involves many phases of work in order to gather the necessary data to make the work both complete and comprehensive. Appreciation of the splendid cooperation of various agencies and individuals who gave their time and assistance in gathering data for the preparation of this report is hereby acknowledged.

Yellowstone County Officials

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Benson B. Hagerman, Commissioner

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Baringer Pump Project ..... John F. Baringer, Treasurer
Cartersville Irrigation District ..... R. C. Harkin, Secretary
Hammond Irrigation District ..... J. J. McIntosh, Secretary
Yellowstone Irrigation District ..... E. E. Fenton, Secretary

FOREWORD

In nearly all of the 17 Western Reclamation States a water right is obtained by first making a filing with some legally designated central state agency—usually the State Engineer's Office—setting forth the amount of water desired and the area proposed to be irrigated. A study is then made of the sufficiency of the water supply and, if found adequate, a permit for use of the water is issued and recorded. If studies show that the stream is depleted, the application is denied. The procedure in Montana, however, is vastly different.

In Montana a right to the use of water from a stream not adjudicated by the courts is acquired by posting a notice on the stream and filing a copy of same in the office of the county clerk of the county wherein the appropriation is located, and by proceeding to divert and use the water. Where a person diverts and uses water from a stream without posting or filing a notice, a water right based thereon has been recognized as valid by the courts. Whenever it becomes necessary to adjudicate the stream, both methods of acquiring rights have been recognized by the courts, and the amount of water finally decreed and dates of priority in either case are determined by the evidences and proofs.

Under Montana law there is no restriction as to the amount of water one may designate in his notice of appropriation. As a consequence, the amount set forth in the filing in no way indicates the amount being diverted and used, nor does it show whether or not the water was ever used at all to perfect the right. Nor is there any relation whatsoever between the amount filed on and the normal flow of the stream. To further complicate this matter, our courts have made it almost impossible to prove the abandonment of a water right.

There is no central office in the State where recordings are filed, or any supervision over the distribution of water from unadjudicated streams. One wishing to study the validity of a water right must make a search of the county records wherein the stream is located and perhaps two, three, or more counties if the stream courses through them. About the only result one will accomplish by such a research will be a tabulation of the dates of filing. The amounts of water filed on will be of no consequence; there is no conclusive evidence that the recorded appropriations have been perfected, and there is no record of the rights which are being used but never recorded. Therefore, a purchaser of ranch property, where he has to depend upon irrigation from a stream that is not adjudicated, has no way of determining the validity or priority of his water right. He has no assurance of the value of the right until the stream is adjudicated by the court, when each claimant must prove his claim by material witnesses.

The pioneers who are able to offer direct testimony in adjudication suits are rapidly passing on. One phase of this Water Resources Survey is to obtain all of the first-hand information possible on water and land use from the "old-timers" who are left, before it is too late. These data will include every known water right up to the time of completing the work in the respective counties, and the information will be on file for inspection in the State Engineer's Office. At the time of this publication, Yellowstone, Carbon, Stillwater, Big Horn, Custer and Rosebud Counties are completed, with work progressing on Musselshell, Golden Valley and Wheatland Counties. A prospective land purchaser, after studying the

record in these counties, may have a good idea of the sufficiency and priority of the right appurtenant to the land in question.

In this and succeeding volumes of the data compiled by this Water Resources Survey, it is the intention to provide as much information as is possible relative to the water right records of the various counties, as well as to assemble such other information as may be available from all sources having knowledge of these various water rights. Every precaution is being taken to avoid errors in the compilationof these data.

The results of this work were used in negotiating the Yellowstone River Compact between the States of Wyoming, North Dakota and Montana. In arriving at an equitable division of the waters between the states, it was necessary for Montana to have a catalog of its irrigated land and water use. This same question may arise in other river basins. Again, it is highly important that Montana gather such data, and thereby be able to defend its water rights in the development of the great river basins of the Missouri and Columbia Rivers.

The subject of water rights is coming more and more into prominence as the rapid expansion of our irrigated area proceeds under the impetus of both State and Federal development programs. As new canals are dug and old canals and ditches are enlarged and extended, the relative area of land to be irrigated compared to the water supply available for irrigation becomes greater, and a competition for the limited water supply results, which often develops into controversy over the right and ownership of the water.

In a strict sense a "water right" on a live stream does not imply ownership in the same way as does a deed to a tract of land or a certificate of title to an automobile. A water right implies only the right to divert and use water from river or stream. Water when stored in a reservoir, however, is recognized as real property which may be sold or disposed of as desired by the owner. The ownership to the water of our rivers and streams rests in the State and the rules under which the State grants to the individual the right to use these waters are known as Water Right Laws.

The early settlers in Montana took up land under the provisions of the Homestead Law of 1862 and the Desert Land Act of 1877. The former act gave 160 acres of land to anyone who settled on it and put it in cultivation. The latter gave 640 acres of land to anyone who would irrigate it and pay the government $1.25 per acre. In 1890 filings, under the Desert Land Act, were reduced to 320 acres. The construction of ditches on desert claims was in compliance for title to land, rather than for irrigation, and little attention was paid to the water supply available. Consequently, miles of ditches were dug through which no water ever flowed. This is especially true in the drier parts of the state, where the diversions were made from intermittent streams.

In the more fertile mountain valleys irrigation was given more importance than in the plains country. Live streams provided a dependable source of water supply and the ditches which tapped them were designed to actually carry water, not merely to comply with a legal requirement to obtain title to a piece of land. Thus, the right to diversion and use of water for irrigation became as important as the acquisition of title to the land.

But, while the government granted a patent deed as evidence of title to the land upon proof of compliance with the Homestead Laws, there was no deed, certificate of title or other legal instrument offered as evidence of title to a water right.

Water rights refer also to other uses than irrigation. Thus, the authorized use of water for mining, power, fish hatcheries, bird refuges, recreational purposes, municipal needs for culinary supply and sewage disposal, manufacturing, or navigation, all may become valid water rights.

The first irrigators took for granted their right to use water from creeks or rivers for irrigation. They saw water going to waste and appropriated it to their needs. It was as free to them as the air they breathed. They made no official record of the game they shot for food or the fish they caught in the streams and likewise considered it unnecessary to make official record of the time, place, or the amount of water diverted for irrigation. However, time has changed these conditions and it is now necessary to record the game killed and limit the fish catch, and also file a claim for the water appropriated from the streams and rivers for irrigation or other use.

When game was plentiful, no one concerned himself with the number of deer a person killed. But when the game became scarce, steps were taken to prevent a few persons from taking more than their share while others had to go without. To do this it became necessary to issue licenses or permits to kill game and also to keep a record of game killed, a practice which is still followed.

Likewise, when only a few settlers diverted water for irrigation and the supply was more than enough for all, no one was concerned about the exact amount used by any one person; but as more and more settlers constructed diversion dams and ditches and tapped the rivers and streams for irrigation water, it soon became evident that there would not be enough water for all. Thus, a year with low water brought about disputes over the division of the supply. The older settlers, in such cases, demanded that the later comers close down their headgates and refrain from taking water in order that the prior appropriations might have a full supply. The later users, on the other hand, insisted that the available supply be divided among all users so that all might share alike.

Thus, progressive over-development of irrigation, together with the occurrence of seasons of water shortage, combined to bring about the enactment of Water Right Laws in the western states where irrigation is practiced.

METHOD OF SURVEY

Data incorporated in this report were obtained by the field survey method in cooperation with the irrigators on the land.

For irrigation systems under private ownership, water users were asked for specific information as to the source of water, present acreage irrigated, potential irrigable acreage under existing works, seeped acreage, condition of irrigation system, type of system, water supply, dates of priority, and the amount of water appropriated or decreed. This information was then recorded on a field form and later checked as to its authenticity.

The information in regard to the location of the irrigation system, present irrigated and potential irrigable lands, was indicated on aerial photographs with the exact location of each shown, and the various systems distinguished by color. The procedure for land under Government owned projects, irrigation districts, and incorporated ditch companies was the same, except that all of the individual operators were not contacted.

After the field survey was completed, the information was mapped on township maps from the aerial photographs, by means of projection, to insure the utmost in accuracy. In addition to the information pertaining to irrigation, all culture, drainage, section lines, etc., were taken in order to make complete and authentic township plats for the area concerned. This information was then mapped by farm units on individual farm forms that show the farm boundary, the location and type of irrigation system, location of irrigated and potential irrigable lands, present irrigated acres, potential irrigable acres, types of system, source of water, etc., with water filings attached. If the field survey information was complete, these individual farm forms were completed in the office. If not, the water user was again contacted in an attempt to complete the form. After these farm unit forms were completed a summary was made of each township, which shows the name of the water user, section, township and range, source of water, whether a user has a private irrigation system or is under a ditch company or irrigation district, acres irrigated from each source, present irrigated acres, potential irrigable acres under existing facilities, and maximum irrigable acres. The summary given in this report was tabulated from these township summaries to show the totals for the county. After this was accomplished and a final check made, color separation maps were drawn which included from 3 to 10 separation plates, depending on the number of colors that appear on the final township map in Part 2 of this report. Section and township corner locations were obtained by the photogrammetric system, based on Government land classification maps, County maps, plane table sheets and other sources.

This is the first survey of its kind ever to be consummated in the United States. The value of this work has been well substantiated by giving Montana its first accurate and verified information concerning its water resources under existing irrigation facilities. New lands to be developed by State and Federal constructing agencies are not within the scope of this report. No effort has been made to analyze economic possibilities, or the problems of the irrigated projects, or to make recommendations as to their future development. The facts presented are as found and provide the items and figures from which a detailed analysis can be made.

Rosebud County Orgonization

Rosebud County was created February 11, 1901. At that time it embraced 9,600 square miles, which is approximately two times the area of Connecticut. The Big Horn and Musselshell Rivers formed most of its westeern boundaries, with Dawson County on the north and the State of Wyoming on the south. Its boundaries remained unchanged until 1913 when about 3,500 square miles were taken to form a part of Big Horn County. Four years later the boundary lines with Dawson, Musselshell and Yellowstone Counties were more clearly defined. In 1919, one thousand square miles were detached to form Treasure County, leaving Rosebud with its present area of 5,067 square miles.

Rosebud County is located in southeastern Montana and is bounded on the east by Custer and Powder River Counties: on the north by Garfield County; on the west by Petroleum, Musselshell, Yellowstone, Treasure and Big Horn Counties; and on the south by Big Horn County. Forsyth, the County Seat, is the principal town in the area.

Transportation

The area is served by the Northern Pacific Railway, the Chicago, Milwaukee, St. Paul & Pacific Railroad, U. S. Highway No. 10 & 12, and State Highway No. 6, which provide convenient marketing outlets for agricultural products and livestock. Aside from these transportation facilities, the area is well supplied with graded county roads, which make the main highway and railroad shipping points accessible throughout the year. The County is also served by the Greyhound Bus Line and several Motor Freight Lines. An emergency landing field is located at Forsyth on the Northwest Airlines Route.

Early History

In 1804 the Northwest Company, under the leadership of Francois Antoine Larocque, organized a party "to undertake a journey of discovery to the Rocky Mountains". The party entered southeastern Montana about July 15, 1805. This was the first party of fur traders in this area. Captain Clark, of the Lewis and Clark expedition, traveled down the Yellowstone River through this area in 1806.

In 1835 the American Fur Company established Fort Van Buren on the Yellowstone at the mouth of the Rosebud River. It was built by Samuel Tullock and named for President Van Buren. In 1850 the same Company established Fort Sarpy on the north bank of the Yellowstone below the mouth of the Rosebud River. This Fort was built by Alexander Culbertson and named for J. B. Sarpy.

After the fur traders came the professional hunters and skinners. These groups killed the buffalo for skins in such tremendous numbers that within a few years they completely disappeared from the range.

The year 1881 witnessed the arrival of a Northern Pacific survey party, and with the completion of the railroad the first influx of settlers came, thus causing the disappearance of the frontier. With the surveyors was Charles B. Taber, who homesteaded on the Rosebud and took a prominent part in later development of this area. Forsyth was started in 1882 before the railroad arrived and was platted by the Northern Pacific in October on a portion of Alexander's ranch. Charles Young, the first merchant, opened his store in the spring of 1882 and a school attended by 15 pupils was opened the following year. The town was named for General James W. Forsyth, who, with Captain Marsh as navigator, explored the Yellowstone River in 1875, taking the steamer Josephine an estimated forty-six miles upstream from Pompeys Pillar—which was the highest point ever to be reached by steamer.

Climate

Rosebud County has a climate typical of the semi-arid Great Plains Regions, marked by abundant sunshine, low relative humidity, moderate winds, low precipitation and wide daily and seasonal variations of temperature. The altitude is about 2,500 feet along the Yellowstone River Valley, where most of the irrigation is concentrated and the annual precipitation is about 14 inches. The last killing frost in the spring usually occurs about May 8 and the first killing frost in the fall about September 30, allowing a frost-free period of approximately 145 days. Occasionally late spring and early fall frosts cause crop damage, as do hail and flash summer rains, which at times attain cloudburst intensity. Most of the total rainfall is received between April 1 and September 1, being the heaviest during May and June. The summer and winter extremes of temperature differ greatly. At Miles City, 45 miles east of Forsyth, the highest temperature ever recorded is 112 degrees F., and the lowest is minus 65. There are extreme temperatures that are seldom reached and are of short duration. The annual mean temperature is about 44 degrees.

Early Agriculture

Cattlemen were slow to move into what is now Rosebud County because of the hostile Sioux Indians. It was not until after the establishment of Forts Custer and Keogh in 1877 that the great influx of cattle entered the area. The Eastern Montana Livestock Association was formed on October 12, 1883 in Miles City, Montana. The sheepmen moved into the territory soon after the cattlemen and sheep raising had its beginning when large company-owned flocks were brought into the area to graze. In March, 1883, the Custer County Wool Grower's Association was formed at Miles City, and in 1884 the name was changed to the Eastern Montana Wool Grower's Association. As a result of the passing of the Desert Land Act in 1877 and the arrival of the Northern Pacific in 1882, the open range began to disappear with the appearance of the homesteader and nearly all of the tillable lands, regardless of their character, were broken. The livestockmen tried to hold their claims and called fences the curse of the country, but the wave of farm expansion during the homestead period swept over the opposition. Dry land farming prospered from 1906 to about 1917 under conditions of abnormal rainfall and high prices. During the later years drought caused repeated failures, dry land farming methods declined, and the development of permanent irrigation farming started along the Yellowstone and Rosebud River Valleys.

Soils

Preliminary examination of the soils of the Yellowstone River Basin, in which Rosebud County is located, has resulted in their classification, on the basis of physiographic features, into four groups as follows: (1) Soils of the valley bottoms; (2) Soils of the valley benches and terraces: (3) Soils of the bordering slopes and uplands; and (4) Miscellaneous soils and land types.

The soils of the valley bottoms, deposited by flowing waters, are highly irregular, varying in texture from clay to sandy loam. They are generally fertile and well-drained, and are important because of their capacity to produce crops under irrigation.

The second soil group occupies the terraces and benches bordering the valleys. The various benches rise above the valley floor to heights ranging from 10 to more than 250 feet. They also are alluvial soils but more mature and uniform than those of the valley bottoms. They are fertile, medium textured, and commonly friable and free-working. Under proper management, with an adequate water supply, they are capable of sustaining production of all of the crops in this region.

The last two soil groups named above are not generally irrigable. Because of rough topography, thin soil, or isolated positions with respect to an adequate water supply, their agricultural usefulness is limited to dry land farming or grazing.

The soils of Rosebud County have developed under semi-arid climatic conditions, which result in the formation of little organic material and the retention of a large proportion of soluble mineral salts. Therefore, the successful irrigation of such soils requires adequate drainage, natural or artificial, to assure removal of excess water that might otherwise be evaporated from the soil surface and leave a concentration of salts.

(For a detailed soil survey of the middle Yellowstone Valley area see: Soil Survey Series, 1933, No. 33, for sale by the Superintendent of Documents. Washington, D. C., price 35 cents.)

Crops

Native grass was found in great abundance when Rosebud County was created, which made possible the grazing of tremendous numbers of cattle, horses and sheep. Because of the large number of farm and ranch operators engaged in livestock production it is one of the most important crops in the county at the present time. Crested Wheat Grass, introduced into the area in the early thirties, has become an important feed crop and commercial plant. In former years spring and winter wheat was the leading cash crop on both the dry and irrigated farms. Most of the non-irrigated farm land is still used for the production of grain crops—mainly wheat—the largest acreage being located on the Forsyth bench. On irrigated land alfalfa, sugar beets, corn, beans, and small grains are the principal crops. Most farmers have a small garden for the production of small fruits and garden vegetables for home consumption. For the production of diversified crops and maximum yields, irrigation is necessary to supplement the natural rainfall during the summer. Small grains may be grown in most seasons under good dry land farming methods.

LIVESTOCK

All of the area contiguous to the Yellowstone River Valley in Rosebud County is considered a range country, and on this range land sheep and cattle are produced in large quantities, with sheep leading cattle in numbers. The range is used for summer grazing. The livestock is brought to ranch headquarters, usually located in the irrigated valleys, for winter feeding. Much of the hay and grain grown on the irrigated land is fed to the cattle and sheep raised on the ranches. Since feeds such as corn and alfalfa can be produced in abundance on irrigated land, the trend is to finish more livestock locally. Hogs are common on most irrigated farms, being raised to supply the home demand for meat and the local market. Dairy cattle are kept on most farms, some with only sufficient numbers to supply the home needs and others with larger herds from which the sale of milk or cream is used to supplement the farm income. The distance from large consuming centers limits the market for dairy products. Some farms have horses for draft purposes, but the majority use tractors exclusively for farm work. Flocks of poultry are kept on nearly all of the farms to supply the home needs, with the surplus sold locally or bartered for groceries. Honey production is another important farm enterprise in the county.

NATURAL RESOURCES

Natural resources in the county have been but partially developed. Coal is the most widely distributed and is of bituminous and sub-bituminous grades. A large mine is operated by the Northern Pacific Railway Company near Colstrip, Montana, in the Rosebud Coal Field.

The Rosebud Coal Mine is an open pit operation producing coal from the Rosebud Seam at a point about 35 miles south of Forsyth, Montana. Some thirty years ago, an engineering party, employed by the Northern Pacific Railway Company, conducted extensive exploration work in this field to determine a suitable location for a mine for the production of coal by stripping methods of suitable character and in sufficient quantity to meet the requirements of railroad operation. A location was developed on Armell's Creek about 30 miles due south of the Northern Pacific mainline, requiring the construction of a branch railroad and the establishment of a townsite as headquarters for the operation.

In 1923, it was decided to develop the mine at this place, it having been determined that extensive areas of coal lay under an overburden of from 20 to 80 feet in depth. A railroad 30.5 miles in length was constructed in that year, and the townsite of Colstrip was surveyed. The operation was placed in charge of the Northwestern Improvement Company, the coal mining subsidiary of the Northern Pacific Railway Company. That Company entered into an operating contract with Foley Brothers, Inc., to open up Pit #1, strip, mine and deliver to the Railway Company at Colstrip such amounts of coal as would be required to fill the coal orders of the Railway Company. Under this contract, shops, warehouses, a mess hall, men's dormitory, offices, etc., were constructed, and coal commenced to be mined and delivered in September, 1924. Subsequently, additional contracts were awarded to Foley Brothers under which Pits #2 and #3 were opened up. Operations in those pits were brought to a conclusion in January, 1947, and under a new contract, the Contractor is now engaged in

mining and delivering coal from Pits #4 and #5. In order to facilitate deliveries under this new contract, the Northern Pacific Railway Company extended its Colstrip Branch an additional four miles and constructed a new assembly yard at Cow Creek.

During the period of 23 years since mining commenced, the Contractor has delivered to the Railway Company from these various pits more than 31,000,000 tons of coal, the average for the year 1943 to 1945 being better than 2,500,000 tons per year. In order to produce this quantity of coal, over 58,000,000 cubic yards of stripping have been moved. The operations extend for a distance of eight miles. Now that the war is over, it is anticipated that annual demand will range between 1,750,000 and 2,000,000 tons. All of this coal is used for the operation of the Northern Pacific Railway.

It would have been impossible to have accomplished this immense amount of work without the use of the largest and most advanced types of dirt-moving machines. The Contractor has been furnished by the Northwestern Improvement Company with a first class plant, which he has kept in excellent condition. As the result of long and continuous experience in this field, the Contractor has been able to evolve very efficient methods of stripping and extraction, and the operation proceeds from day to day with a minimum of operating delays to fill the weekly requirements of the Railway Company. The coal is delivered by the loading shovel directly on to the railway cars and moved out of the field for distribution over the Northern Pacific system in trainload lots each day without previous preparation. The normal working face of the coal is approximately 28 feet, and the percentage of impurities is very low.

Since the town of Colstrip was established, the Improvement Company has from time to time built additional residences to accomodate its own employees and those of the Contractor. Living conditions are of the best. The houses are all served by water, electricity and sanitary sewers, and equipped with refrigerators and electric ranges. In order to provide for school requirements, first a grade school and subsequently a high school, both of frame construction, were built, but as these became inadequate, the Company in 1945 completed a two-story and basement brick schoolhouse with a gymnasium and theatre building as annexes thereto, the whole setup being one of the most modern and complete school plants in the state. The teachers are housed in a modern 8-room dormitory, the kitchen and laundry of which are electrically equipped.

Water supply is furnished from four deep wells. Adequate water mains, hydrants, sewers, sewage disposal plant and modern fire-fighting equipment serve the town. The streets are paved with blacktop upon a crushed rock base. There are cement sidewalks throughout, green lawns and shade trees.

The operation has become widely known. Mine operators, engineers and Government officials from all parts of the United States and from foreign countries have visited the pits and acquainted themselves with the methods and types of machinery used in the operation.

NORTHERN CHEYENNE INDIAN RESERVATION

The Northern Cheyenne Indian Reservation, sometimes called the Tongue River Indian Reservation, was established by executive order in 1884, and is located in Big Horn and

Rosebud Counties lying east and adjacent to the Crow Indian Reservation. In 1910, the boundaries were modified and more definitely described to include 444,277 acres. The Indians are of the northern band of the Cheyenne tribe and are estimated to number about 1,600. The reservation lands are almost wholly Indian owned and agricultural operations are limited to the production of feed for livestock, which is the principal industry. The mountainous areas generally produce sufficient grass for forage purposes and permit production of small quantities of hay necessary to carry the stock through the winter. In Rosebud County, on the reservation, irrigation is very limited and is mostly of the intermittent flood type.

In 1905, the United States began construction of the Tongue River Irrigation Project, which is located in Rosebud County, to divert water from the Tongue River to irrigate 7,000 acres of land, with a canal about 25 miles long which follows close to the west bank. Only 6.8 miles of the canal, covering 1,200 acres, were completed. The original plan to cover the larger area was abandoned because of difficulty in costly construction. It is estimated that not more than 600 acres have ever been irrigated in any one year under this project. The Indian Service has purchased water in the Tongue River Reservoir from the State Water Conservation Board to irrigate this land, and had contracted to pay for 7,500 acre-feet of water annually, although the present use is only a small fraction of that amount.

WATER PURCHASE CONTRACT
BETWEEN
UNITED STAES, TONGUE RIVER WATER USERS' ASSOCIATION
AND
STATE WATER CONSERVATION BOARD OF THE STATE OF MONTANA

This contract dated as of the 15th day of March, 1938, between the Tongue River Water Users' Association, a Montana corporation, hereinafter called the "Association", the State Water Conservation Board of the State of Montana, duly created, authorized and acting, under and by virtue of the laws of Montana, hereinafter called the "Board", and the United States of America, acting by and through the Secretary of the Interior for the benefit of lands on the Tongue River Indian Reservation, Montana, hereinafter called the "Water Purchaser";

WITNESSETH:

1. WHEREAS, the Board proposed to construct an irrigation and flood control project, (herein called the "Project") comprising the construction of one large earth fill dam, spillway and control works, in Rosebud and Big Horn counties, Montana, in accordance with plans and specifications and estimates of cost heretofore adopted; and

2. WHEREAS, the Board has acquired the right to store, control and/or divert all unappropriated water of Tongue River, Rosebud and Big Horn counties, Montana, pursuant to Declarations filed in Book 3 of Water Rights at Page 70 in the office of the County Clerk and Recorder of Rosebud County, Montana, and in Book 7 of Miscellaneous at Page 408, in the office of the County Clerk and Recorder of Big Horn County, Montana; and

3. WHEREAS, it is agreed by the parties hereto that the total waters to which the Board is entitled will be at least sufficient to permit the operation of said project at its full capacity so that 32,000 acre feet of water can be made available annually during the irrigation season and the purchaser recognizes the right of the Board to impound, during the non-irrigation season, all of the aforesaid waters; and

4. WHEREAS, the Association has heretofore entered into a contract with the Board, dated July 7, 1937, whereby the Board agreed that, upon the completion of the Project, it would furnish to the Association the total available yield of storage water from the Project for certain purposes, all as more fully set forth in said contract (herein called the "Water Marketing Contract"), a copy of which is on file at the office of the Board and the Association respectively;

5. WHEREAS, the United States desires to secure water for the irrigation of certain lands located on the Tongue River Indian Reservation, Montana.

6. NOW, THEREFORE, in consideration of the premises and of the mutual terms, covenants and conditions hereof, it is mutually covenanted and agreed as follows:

7. It is expressly understood that the participation of the United States in this agreement is entirely conditional upon authority therefor being duly granted by the Congress of the United States.

8. The Association upon the completion of the Project will furnish to the Water Purchaser, at the reservoir, 7,500 acre-feet of water annually during the irrigation season beginning May 1 and ending September 30 from the reservoir comprising the Project, provided, however, that in the event that from time to time thereafter the Board shall have an inadequate amount of water from the Project to permit the furnishing of the number of acre-feet of water in any year for which there are such outstanding water purchase contracts, the water purchaser in such year shall be entitled, in lieu of each acre-foot of water for which he has contracted, to a share of the total water available representing the proportion that one acre-foot of water annually bears to 32,000 acre-feet of water annually or (but only if there are outstanding water purchase contracts for the purchase annually of more than said amount of water) to the total number of acre-feet of water agreed to be purchased annually under outstanding water purchase contracts. The distribution of such proportionate shares to the water purchaser during such year shall constitute a complete performance in said year of the obligation of the Association to deliver the number of acre-feet of water for which said water purchaser has contracted, and the purchaser nevertheless shall be obligated to pay the full sums due under this contract and to perform his covenants and obligations hereunder, subject to conditions contained in Section 9 hereof. The Association and the Board agree not to make contracts for the sale of more than 32,000 acre-feet of water from the Project annually except to the extent that the storage capacity of the completed Project is in excess of said amount. So long as the right of the Association under its water marketing contract to distribute the water of the Project has not been terminated, the Board shall be under no obligation to distribute water to the water purchaser hereunder, it being expressly understood that the Association only shall be so obligated.

9. The water purchaser shall pay to the Association or the Board the sum of Nine Thousand Seven Hundred Fifty ($9,750.00) Dollars on December 15, 1939, and the sum of Nine Thousand Seven Hundred Fifty ($9,750.00) Dollars on December 15 of each and every year thereafter to and including December 15, 1937. On December 15, 1939, and on December 15 of each and every year thereafter during the useful life of the Project, the water purchaser also shall pay to the Association such amount as the Association shall have previously notified the water purchaser (by a written notice given at least 45 days prior to each such December 15) to be necessary for his proportionate share of the amount of the operating costs of the Project for the year following respectively each said December 15, subject to appropriations by the Congress of the United States for this purpose and each and every year during the life of this contract. The term "operating costs" as used herein shall include all costs of the maintenance, repair, operation, and necessary alteration of the Project, and all costs incurred by the Association or the Board in the distribution of water from the Project. The determination by the Association of the amount and necessity of such operating costs and the annual amounts payable by the water purchaser to meet such operating costs shall be final, conclusive and binding upon the parties hereto, and

the amounts so determined shall be deemed a debt, payable as aforesaid, to the same extent as if the amounts were specifically enumerated herein, subject, however, to appropriations of the Congress of the United States, to be made for these express purposes.

10. All moneys required to be paid by the water purchaser to the Association hereunder shall be paid at Miles City, Montana, or such other place as the Association shall appoint in writing. Every installment or other sum of money, required to be paid hereunder, which shall remain unpaid after the same becomes due, shall bear interest at the rate of six (6) per centum per annum.

11. The water purchaser hereby agrees to be bound by any and all the terms, provisions and limitations of the Articles of Incorporation, and By-Laws of the Association, including all amendments and supplements hereafter made thereto with the approval of the Board, and the aforesaid water marketing contract between the Board and the Association as fully and completely as if the terms, conditions and limitations therein contained were herein fully written, provided, however, that nothing herein contained shall conflict with applicable laws of the United States. It is further expressly agreed that no additional obligations shall arise by reason of this or other sections of this agreement not herein definitely set forth and that all payments to be made hereunder are subject to appropriations by the Congress of the United States for these express purposes.

12. It is expressly agreed and understood that the United States of America, one of the water purchasers under said Project to the extent of 7,500 acre-feet, has the right to sell or otherwise dispose of any part of said 7,500 acre-feet of water not used, each and every irrigation season during the life of this contract.

13. In the event that the Board shall give written notice to the water purchaser that the Association is in default in the performance of any of its obligations under the water marketing contract, and that the Board has elected to exercise the functions of the Association under this contract, all moneys due or becoming due and payable to the Association hereunder shall be paid to the Board, and the Board, in its own name, shall have the sole right to enforce this contract and exercise all of the rights and powers of the Association with respect thereto, unless and until the Board shall give written notice to the water purchaser that the Association itself may resume the collection of moneys and the exercise of its powers hereunder. Moneys then to be paid by the water purchaser to the Board shall be paid at the office of such Board in Helena, Montana, or such other place as the Board shall appoint in writing. The water purchaser hereby consents and agrees to the execution and delivery by the Board of the Indenture referred to in said water marketing contract and to the assignment thereby of the interest of the Board in and to this water purchase contract and to the remedies of the Trustee thereunder in the event of default by the Board in its obligations under the Bonds or Indenture.

14. The aforesaid payments and obligations of the water purchaser hereunder are for the privilege of obtaining water so long as the water purchaser shall not be in default under this contract or his rights terminated hereunder, and the water purchaser shall be obligated to pay the aforesaid annual installments and perform his covenants and duties hereunder, notwithstanding the fact that no water shall be available by reason of a shortage or other-

wise, or that no water is actually taken by the water purchaser, or that the Association or the Board may withhold water from the water purchaser by reason of his default under this contract. The obligation of the water purchaser to make the aforesaid payments required hereby shall be absolute and unconditional so long as this contract remains in full force and effect, subject to the conditions of payment set out in paragraph 9 hereof. It is expressly understood that all the right, title and interest in and to the Project and the water rights exercised in connection therewith shall be and remain in the Board, and that the water purchaser shall acquire no right, title or interest in the Project or such water rights. The water purchaser shall acquire no rights or equities under this contract which will in any manner prejudice the right of the Association to terminate this contract in the event that the water purchaser shall be in default hereunder: *Provided*, That in no event shall the contract be terminated except after notice by the Association to the water purchaser and failure by the water purchaser to comply with the terms of the contract within a reasonable time.

15. It is understood that without regard to priority in the execution of this water purchase contract, or priority in the use of water hereunder or any other reason, the water purchaser under this contract shall have no preference or priority entitling him to receive water from the Project in advance of other water purchasers who have entered into water purchase contracts for water from the Project (unless such contract shall specifically provide to the contrary), all such water purchasers to have an equal and ratable right to water in accordance with the respective amounts to which they are entitled under their respective water purchase contracts. The existing prior rights of the water purchaser to water heretofore appropriated for irrigation purposes shall not be prejudiced hereby.

16. The provisions of this contract shall apply to and bind the successors and assigns of the respective parties, but the water purchaser shall make no assignment of this contract without the written consent of the Association (unless its rights hereunder have been terminated or water is being withheld from it) and the Board.

17. *"Member of Congress" Clause.* No Member of or Delegate to Congress, or Resident Commissioner, shall be admitted to any share or part of this contract or to any benefit that may arise therefrom, but this restriction shall not be construed to extend to this contract if made with a corporation or company for its general benefit.

18. *Covenant Against Contingent Fees.* The Association and the Board, each for itself, warrants that it has not employed any person to solicit or secure this contract upon any agreement for a commission, percentage, brokerage, or contingent fee. Breach of this warranty shall give the Government the right to terminate the contract, or, in this discretion, to deduct from moneys to be paid by it under the terms of the contract the amount of such commission, percentage, brokerage or contingent fee.

19. *Contract Contingent on Appropriations by Congress.* Where the operations of this contract extend beyond the current fiscal year, the contract is made contingent upon Congress' making the necessary appropriations for expenditures hereunder after such current year shall have expired. In case such appropropriation as may be necessary to carry out this contract is not made, the Contractors hereby release the United States from all liability due to the failure of Congress to make such appropriation.

IN WITNESS WHEREOF, the Tongue River Water User's Association pursuant to authority from its Board of Directors has caused this Contract to be executed in its corporate name by its President or Vice-President and attested by its Secretary or its Assistant Secretary, and the State Water Conservation Board has caused this contract to be executed in its corporate name by its chairman or vice-chairman and attested by its Secretary and Treasurer and said parties have caused their respective corporate seals to be affixed hereto, and the United States of America, by and through the Secretary of the Interior, has hereunto set his hand and seal, all on the day and year first above written.

(Seal)

ATTEST:
By: A. M. Ball
Secretary

TONGUE RIVER WATER USERS' ASSOCIATION

By: Albert G. Brown
President

ATTEST:
By: Rockwood Brown
Secretary-Treasurer

STATE WATER CONERVATION BOARD

By: Roy E. Ayers
Chairman

(SEAL)

Approval as to form:

UNITED STATE OF AMERICA

Assistant Secretary of the Interior

By: .....

A number of attempts have been made by individuals to develop small irrigation tracts along reservation streams, but in general these have not been successful, principally because of the inadequacy of the water supply during the irrigation season. The Indian Service has made a complete survey and contemplate a storage reservoir on Rosebud Creek. They believe that if this reservoir can be completed much of the bottom land on Rosebud Creek can be put to irrigation. The Ridge Walker Ditch, Thompson Ditch, Lone Elk Ditch and Bixby Ditch on Lame Deer Creek were repaired in about 1914. On Rosebud Creek, the Upper O. D. Ditch, Lower O. D. Ditch, Charles Teeth Ditch and the Busby School Ditch were repaired in about 1915. In 1935 the Busby School Ditch was rebuilt.

The reservation was established by executive order. State Court gave the Indians 24th right on the Tongue River. In the Winters case, Winters v. United States, 207 U. S. 564, the rule was extended to executive order reservations by United States v. Walker River Irrigation District, 104 Fed. 2d, 334. Consequently, there was an implied reservation of water as of the date of the executive order of November 26, 1884, establishing the Northern Cheyenne Indian Reservation.

WATER SUPPLY

The principal streams in Rosebud County from which water for irrigation is diverted are the Yellowstone, Tongue and Rosebud Rivers and their tributaries. The main diversions for irrigation uses from the Yellowstone River in Rosebud County are by the Hammond

Irrigation District, Cartersville Irrigation District, and the Baringer Pump Project. Land is also served by the Yellowstone Irrigation District, which begins a short distance east of Hysham and extends on the south side of the river into Rosebud County. The water supply in the Yellowstone River has always been plentiful, but because most of the gravity ditches were built too high to take water when the river flow is lowest it has been necessary for diverters to construct dams across the river to raise the water level at the points of diversion.

The main stem of the Yellowstone River rises in northwestern Wyoming flowing north through Yellowstone Lake, which has an area of 142 square miles, and provides a considerable amount of natural flow regulation. From Yellowstone Lake the river flows north to Livingston, Montana, where it makes a big bend and then flows northeastward to its confluence with the Missouri River just across the Montana-North Dakota State line near old Fort Buford.

Stream flow records for wire-weight gauge located in the southwest quarter of the southwest quarter of Section 14, Township 6 North, Range 40 East, at highway bridge at Forsyth, Montana, shows a maximum discharge observed 63,600 second-feet June 15, 1922 (gauge height, 12.20 feet); minimum 2,650 second-feet December 5, 1922 (gauge height 1.8 feet). Records available were from July, 1921 to September, 1923. Drainage area 40,200 square miles.

Tongue River

The Tongue River rises in the northeastern portion of the Big Horn Mountains in Wyoming in a number of small streams that flow through gently rolling country before they unite just south of the Montana-Wyoming boundary line to form a single stream. From the Montana-Wyoming state line, the stream flows northeastward through Montana for about 125 miles to Miles City, where it empties into the main stem of the Yellowstone River. Throughout the lower area in Wyoming, water for irrigation is diverted from the tributary streams. Because of the large acreage under irrigation, many of the streams are completely depleted. In Rosebud County, the main diversion is by the Birney Project on the Northern Cheyenne Indian Reservation. This project, originally designed to irrigate 7,000 acres by gravity diversion, was not completed due to difficult construction and inadequate water. However, facilities for about 1,200 acres were completed. We found that only a small part of these acres have been in use during recent years. In addition, there are several private diversions.

The Bureau of Reclamation plan for the Tongue River basin in Wyoming provides for a proposed reservoir of 25,00O acre-foot capacity on the south fork of the Tongue River, together with a low-pressure pipe line 15,000 feet long, a 2,500 foot penstock, and an installed capacity of 25,000 kilowatts. This will permit the annual development of 55,000,000 kilowatt hours of seasonal secondary power particularly adapted to meet the demands of irrigation pumping. Below the Tongue River Reservoir the plan of development provides for the irrigation of 26,000 acres by the use of small pumping plants.

Stream flow records from April, 1928 to September, 1938 for water stage recorder located in Section 23, Township 9 South, Range 40 East, one and one-half miles east of

Decker and two miles north of the Wyoming State line, show a maximum discharge observed 7,220 second-feet June 2, 1929 (gauge height 9.25 feet); minimum daily discharge 2.9 second-feet August 20-21, 1934. Drainage area of 1,610 square miles. For gauge located in the southeast quarter of Section 19, Township 6 North, Range 48 East, one mile below Pumpkin Creek, (main tributary to the Tongue River in Montana), and twelve miles south of Miles City. Records available, April to September, 1938, May, 1928 to October, 1932, show a maximum discharge observed, 5,910 second-feet June 5, 1929 (gage height 4.4 feet, old site and datum); no flow at times. Practically all flow diverted at times during irrigation season at Tongue River Yellowstone Irrigation District dam one and one-quarter miles above gage.

The Tongue River Dam and Reservoir, a State Water Conservation Board Project, consists of a dam and storage reservoir in the Tongue River about ten miles north of the Montana-Wyoming State line. No canal construction was included as a part of the project. The reservoir has a storage capacity of 73,900 acre-feet to be used for supplemental irrigation along the 200 miles of the Tongue River Valley to its mouth, and also lands in the Yellowstone River Valley north and east of Miles City. A total of approximately 30,000 acres are benefited. This dam is the largest of all those built by the State Water Conservation Board. The drainage area above the reservoir site is 1,700 square miles, situated in the high-timbered reaches of the Big Horn Mountains and foothills in Wyoming. The Tongue River dam is an earth, sand and gravel fill, having a total crest length of 1,810 feet and top width of 36 feet. The Board has had surveys made on 31 possible diversions and pumping units along the Tongue River Valley representing a total of 116 miles of laterals, which would serve approximately 10,357 acres of land owned by water purchasers aggregating 28,011 acre-feet of water. These surveys were made to show the potential possibilities under the Tongue reservoir so that plans of a distribution system could be made.

Rosebud River

The Rosebud River, also called Rosebud Creek, is approximately 110 miles in length and rises on the eastern slope of the Wolf Mountains in Big Horn County, Montana. From its source it flows northeast to north to its confluence with the main stem of the Yellowstone a few miles upstream from Rosebud. It is estimated that the average annual shortage, 1930-1938 period, was 2,300 acre-feet. There are many old irrigation works along the river valley that are not now in use. Present private use is limited to a few diversions and the use of spring flood waters. Flooding is done by the use of check dams in the river channel. Present irrigation is confined to the valley bottom and is practiced more extensively near the mouth of the stream than in the headwaters. There are irrigable lands along the entire length of the stream bottom. The Busby Indian Boarding School has been irrigating about 112 acres by a gravity system from Rosebud River. In most years there is a fair flow of water up to the middle of July, after which the stream usually goes dry even in the upper reaches. Stream flow data records are considered poor and have not been submitted for publication in water supply papers because of the lack of medium and high stage measurements.

The Indian Service has conducted storage investigations to benefit lands within the boundaries of the reservation. Two dam-sites have been surveyed. Dam-site No. 1, the

downstream dam-site, is located in the south half of the northwest quarter and the north half of the southeast quarter of Section 13, and the southeast quarter of the northeast quarter of Section 14. Dam-site No. 2, the upstream dam-site, is located in the south half of the northwest quarter and the southwest quarter of the northeast quarter of Section 24, all in Township 5 South, Range 38 East.

Dam-site No. 1: At a normal water surface elevation of 3,725 the water surface area would be 408 acres, with storage of 8,667 acre-feet. The flooded area would extend about 10,000 feet upstream from the dam, and would have a general width of about 2,400 feet, not counting the arms backed up into tributary creeks. For this same case, the high water elevation would be 3,731 with a flooded area of about 486 acres, which would extend upstream from the dam-site about 11,000 feet, with but little increase in the general width owing to steepness of the sides of the valley.

Dam-site No. 2: At normal water surface elevation of 3,750, the water surface area would be 399 acres, with a storage of 8,995acre-feet. The flooded area would extend about 9,200 feet upstream from the dam, the width varying from less than one-fourth mile near the upper end, to a width of a mile where a wide arm would extend up Corral Creek at a point about one-half mile upstream from the dam-site. For this same case, the high water elevation would be 3,756 with a flooded area of about 453 acres, which would extend upstream from the dam-site about 10,000 feet.

The Indian Service, by reconnaisance survey, has determined the irrigable lands located in the Rosebud River Valley to be: bottom land 3,760 acres, low bench land 2,490 acres, high bench land 4,715 acres, or a total irrigable area of 10,965 acres. This land extends from the dam and reservoir sites under consideration to the north boundary of the Northern Cheyenne Indian Reservation. Most of the land affected lies within the boundaries of Big Horn County but was included in this report because if the proposed development is constructed it will have a definite effect on the lands in Rosebud County along the Rosebud River. Construction of a dam as proposed should lessen the flash flood hazards which now prevail, making permanent irrigation construction practically impossible. Farmers report that during the spring, or after a heavy rain, the river runs bank full, with normal flow just a trickle during July, August and September.

Summary of Irrigated Land by River Basins in the Following Counties Completed to Date:
Big Horn, Carbon, Custer, Rosebud, Stillwater and Yellowstone

River Basin	Present Irrigated Acres	Potential Irrigable Acres	Maximum Irrigable Acres
Big Horn River Basin	46,915.56	14,850.65	61,766.21
Little Big Horn River Basin	17,134.26	9,843.52	26,977.78
Clarks Fork Basin	33,285.96	7,328.00	40,613.96
Missouri River Basin	54.60	62.00	116.60
Musselshell River Basin	100.80	310.60	411.40
Powder River Basin	8,263.60	1,803.60	10,067.20
Rosebud Creek Basin	1,398.50	3,012.20	4,410.70
Rosebud River Basin	11,831.00	4,724.00	16,555.00
East Rosebud River Basin	4,587.50	9,095.47	13,682.97
Rock Creek Basin	58,482.15	16,866.77	75,348.92
Stillwater River Basin	11,661.20	3,458.50	15,119.70
Tongue River Basin	22,136.56	7,479.48	29,616.04
Yellowstone River Basin	153,833.01	29,879.89	183,712.90
Totals	369,684.70	108,714.68	478,399.38

It was necessary to cover 6,925,942.00 acres in the above basins in order to complete the survey.

ROSEBUD COUNTY

Irrigation Summary of Rosebud County by River Basins

Musselshell River Basin Name of Ditch	Source	Present Irrigated Acres	Potential Irrigable Acres	Maximum Irrigable Acres
Private Ditches—Regular Irrigation				
Private	Musselshell River	54.80	76.60	131.40
Private Ditches—Flood Irrigation				
Private	Coulees, Tributaries to Musselshell River	46.00	58.00	104.00
Totals for Musselshell River Basin		100.80	134.60	235.40
Rosebud River Basin				
Private Ditches—Regular Irrigation				
Private	Rosebud River	759.00	2,488.20	3,247.20
Private Ditches—Flood Irrigation				
Private	Cottonwood	113.50	0	113.50
"	Coulees Trib. to Rosebud River	135.50	126.00	261.50
"	Dry Gulch	34.00	0	34.00
"	Greenleaf Creek	50.00	19.00	69.00
"	Lame Deer Creek	0	132.00	132.00
"	Lee Coulee	68.00	102.00	170.00
"	Miller Creek	0	50.00	50.00
"	Paige Creek	80.00	0	80.00
"	Rosebud River	0	75.00	75.00
"	Rye Grass Creek	0	20.00	20.00
"	Sprague Creek & Coulee	128.50	0	128.50
"	West Snyder Creek	30.00	0	30.00
Totals for Rosebud River Basin		1,398.50	3,012.20	4,410.70

Tongue River Basin

Private Ditches—Regular Irrigation

Name of Ditch	Source	Present Irrigated Acres	Potential Irrigable Acres	Maximum Irrigable Acres
Private (Pump)	Hanging Woman Creek	7.00	0	7.00
"	Otter Creek	14.00	0	14.00
"	Spring	1.00	0	1.00
"	Tongue River	3,245.90	3,087.20	6,333.10

Private Ditches—Flood Irrigation

Private	Battle Butte Creek	41.80	42.00	83.80
"	Beaver Creek	0	167.00	167.00
"	Bowman Creek	65.00	0	65.00
"	Bridge Creek & Spring Creek	83.00	0	83.00
"	Bull Creek	63.00	110.00	173.00
"	Cook Creek	80.00	0	80.00
"	Coulees, Trib. to Tongue River	81.00	0	81.00
"	Dry Creek	85.00	0	85.00
"	East Fork Hanging Woman Creek	12.00	0	12.00
"	Goodale Creek	0	58.00	58.00
"	Hanging Woman Creek & Coulees	477.60	37.00	514.60
"	Hart Creek	0	28.00	28.00
"	Lee Creek	33.50	0	33.50
"	O'Dell Creek	10.00	0	10.00
"	Otter Creek	124.00	68.00	192.00
"	Poker Jim Creek	0	30.00	30.00
"	Van Mete Gulch & Coulees	98.00	0	98.00
Totals for Tongue River Basin		4,521.80	3,627.20	8,149.00

Yellowstone River Basin

Name of Ditch	Source	Present Irrigated Acres	Potential Irrigable Acres	Maximum Irrigable Acres
Baringer Pump System (Private)	Yellowstone River	939.00	216.00	1,155.00
Cartersville Irrigation District	Yellowstone River	9,021.06	1,463.86	10,484.92
Hammond Irrigation District	Yellowstone River	2,934.10	397.90	3,332.00
Yellowstone Irrigation District	Yellowstone River	3,527.48	1,794.26	5,321.74

Private Ditches—Regular Irrigation

Private (Pump)	Armells Creek (Waste water from Yellowstone Irrig. District)	75.00	20.00	95.00
Private (Reservoir)	Coulees, Trib. to Great Porcupine Creek	110.50	11.20	121.70
Private (Slough) (Pump)	Coulees, Trib. to Horse Creek	5.00	0	5.00
Private (Reservoir)	Coulees, Trib. to Sun Coulee	0	8.00	8.00
Private (Pump)	Great Porcupine Creek (Waste water from Hammond Irrigation Dist.)	20.00	20.00	40.00
Private (Reservoir)	Muggins Creek	263.00	0	263.00
Private	Spring	0	2.00	2.00
Private (Reservoir)	Sun Coulee	0	355.60	355.60
Private (Reservoir & Pump)	Sweeney Creek & Coulee	78.00	0	78.00
Private (Pump)	Yellowstone River	1,283.50	384.00	1,667.50

Private Ditches—Flood Irrigation

Private	Armells Creek & Coulees	97.00	228.60	325.60
"	Armells Creek, East Fork	89.50	44.00	133.50
"	Armells Creek, West Fork	16.50	81.00	97.50
"	Bull Creek	190.00	0	190.00
"	Coal Creek	0	6.00	6.00
"	Coulees, Trib. to Smith Creek	18.00	0	18.00
"	Coulee, Trib. to North Fork Sunday Creek	20.00	0	20.00
"	Coulee, Trib. to Yellowstone River	9:30	3.00	12.30

"	Graveyard Creek	130.00	0	130.00
"	Great Porcupine Creek & Coulees	209.00	311.00	520.00
"	Horse Creek & Coulees	566.00	150.00	716.00
"	Iron Jaw Creek	632.00	12.00	644.00
"	Johnson Coulee	77.00	29.00	106.00
"	Muggins Creek & Coulees	78.50	0	78.50
"	Sand Creek	397.00	0	397.00
"	Sun Coulee	10.00	0	10.00
"	Sunday Creek & Coulees	193.60	0	193.60
"	Sweeney Creek & Coulees	52.00	0	52.00
"	West Blacktail Creek	59.00	0	59.00
"	Wilson Creek	254.00	0	254.00
Totals for Yellowstone River Basin		21,355.04	5,537.42	26,892.46

SUMMARY

REGULAR IRRIGATION

Name of Ditch	Present Irrigated Acres	Potential Irrigable Acres	Maximum Irrigable Acres
Musselshell River	54.80	76.60	131.40
Rosebud River	759.00	2,488.20	3,247.20
Tongue River	3,267.90	3,087.20	6,355.10
Yellowstone River	18,256.64	4,672.82	22,929.46
Total Regular Irrigation	22,338.34	10,324.82	32,663.16

FLOOD IRRIGATION

Musselshell River	46.00	58.00	104.00
Rosebud River	639.50	524.00	1,163.50
Tongue River	1,253.90	540.00	1,793.90
Yellowstone River	3,098.40	864.60	3,963.00
Total Flood Irrigation	5,037.80	1,986.60	7,024.40
Total All Basins	27,376.14	12,311.42	39,687.56

BARINGER PUMPING PROJECT

The first use of what is now known as the Baringer Pumping Project was made by M. W. Dickey, who, in 1905, installed a steam powered pumping plant in the location of the present Baringer diversion. According to Fred H. Baringer, "Dickey", the name by which he was commonly known to the "old-timers", did not make a recorded water filing but that water for irrigation has been diverted continuously, with the exception of possibly one year, by pumping from the Yellowstone River at or near the point of the original appropriation to and upon the lands in the Hathaway bottom, since 1905. No recorded filings were made until 1920.

According to a notice of appropriation filed in Book 3, Page 16 of Water Right Records in the Rosebud County Courthouse, J. E. Libby, on January 5, 1920, made the first recorded filing for 17.50 cubic feet of water to be diverted from the Yellowstone River. The point of diversion was described as a point in Section 9, Township 6 North, Range 44 East on the South bank of the river. The system was described as a pumping plant with ditches and structures extending from the pumping plant to the place of intended use. The land description of intended place of use was described as a portion of Sections 9 and 10, Township 6 North, Range 44 East.

This system and water right was later transferred to Carl Calvin, who, for a time, operated a diesel powered six inch Pomona water lifter at the site of the original appropriation made by Libby. As this operation did not prove too successful the pumping operation was moved to the Fred H. Baringer location and the two ditch systems were incorporated under one pumping unit. The Calvin pump site has since been destroyed as a result of ice and high water.

On April 4, 1920 Antilace G. Webber filed on 10 cubic feet of water to be diverted from the Yellowstone River at the same point of diversion as the original "Dickey" pumping plant location. The original steam plant was then replaced by a 30 horse power one cylinder Witt tractor fuel operated pump. The notice of appropriation is on file in Book 3, Page 17 of Water Right Records in the Rosebud County Courthouse. The point of diversion was described as a point upon the southern bank of said river upon Lot 5 in Section 17, Township 6 North, Range 44 East. The purpose was for irrigation on agricultural lands. The system was described as a pumping plant which lifts the water from said river about 12 feet and discharges it into a canal 10 feet wide on the bottom. The land description of intended place of use was described as the E½ SE¼, SW¼ SE¼, and Lots 1, 5 and 6 in Section 17, Township 6 North, Range 44 East. This water right and system was later transferred to Fred H. Baringer, which, together with the Carl Calvin right and system was the basis for the creation of the Baringer Pumping Project. In 1945 a surplus pump and electric motor were purchased from the government project at Kinsey. After this, the following two agreements were entered into by the parties concerned. The first deals with the operation and maintenance of the pumping plant, and the second describes the use of the irrigation system.

AGREEMENT

THIS FIRST AGREEMENT, made and entered into this _____ day of January, 1946, by and between Carl Calvin, Fred H. Baringer, John Baringer, Soren Nielsen, Arthur Kamhoot and Carl Lockard:

WITNESSETH; that,

WHEREAS, the undersigned parties to this agreement own and control the respective number of acres situated in the Hathaway Bottom in Rosebud County, Montana, as follows:

Carl Calvin	290 acres
Fred H. Baringer	140 acres
John Baringer	140 acres
Soren Nielsen	100 acres
Arthur Kamhoot	80 acres
Carl Lockard	50 acres

making a total of 800 acres, which the parties hereto desire to irrigate with the pumping equipment hereinafter mentioned; and,

WHEREAS, the parties have already purchased one (1) Fairbanks, Morse, Fig. 6310-14 inch pump with one (1) 40 H. P. 3 phase, 60 cycle, 2200 volt electric motor, and one (1) Cutler hammer starting switch for same, at the cost of $1,218.00; and,

WHEREAS, two of the parties hereto, John Baringer and Fred H. Baringer, own the pump site on the bank of the Yellowstone River where said pump and electric motor is to be installed for the irrigating of the lands of the parties hereto: and,

WHEREAS, each of the parties hereto has contributed to the cost of said pump and motor the sum of One and 50/100 ($1.50) Dollars per acre for the amount of acres of each party as above set forth, and are to contribute the further sum of twenty cents (20c) per acre to raise the balance of said purchase price and to provide a fund for additional expenses and emergency repairs;

NOW, THEREFORE, in consideration of the covenants and agreements herein set forth, and the mutual benefits to be received by each of the parties hereto, IT IS MUTUALLY AGREED, by and between each of the parties hereto with each and all of the other parties to this agreement, that the undersigned shall enter into this agreement for the purpose of furnishing irrigation water to the lands of each of the parties hereto, in accordance with the respective acreage of each party as above designated, and in furtherance of this agreement, it is agreed, that each of the parties hereto shall contribute towards the purchase and installation of said pumping machinery, the proportionate share and part which the number of acres of each of the parties hereto bears to the total acreage to be irrigated as above set forth, and that the pumping machinery above described shall be installed at the location above mentioned at as early a date as possible, and that in addition to the $1.50 per acre already contributed for the purchase of said machinery and equipment as aforesaid, each party hereto shall contribute and pay in an additional sum of 20c per acre to create a fund for further expenses and re-

pairs required in the operation of said pumping plant, said additional moneys to be deposited with the Treasurer hereinafter designated by the parties hereto;

IT IS MUTUALLY AGREED, that said pumping unit shall be depreciated at the rate of five per cent (5%) per annum of the cost thereof for a period of approximately twelve (12) years, ending on October 1, 1958, and shall be depreciated thereafter at the rate of two per cent (2%) per annum, and it is agreed, that each of the parties hereto shall have an undivided ownership and interest in said pumping unit, in accordance with the proportionate share which the number of acres of the parties hereto bears to the total acreage, and it is further agreed, that if at any time hereafter any one of the parties hereto desires to sell his ownership in said pumping unit, that for the consideration herein mentioned, the other parties hereto shall have the first right and option to purchase such interest, and in event the remaining parties hereto do not purchase such interest within a period of five (5) days after offer is made by the party so desiring to sell his interest, such party shall have the option to purchase the remaining interests in said pumping unit of all the parties hereto, at the same price as hereinafter designated, and it is agreed, that no party hereto shall have the right to sell his interest to any third party without the unanimous consent of all the other parties hereto, it being understood and agreed that the price to be put upon any such interest or interests so being sold shall be the original cost of said equipment, less the depreciation that has accrued at the time such purchase is made, in accordance with the depreciating schedule as hereinabove set forth;

IT IS MUTUALLY AGREED, that each of the parties hereto shall, on or before May 15th of each and every year hereafter during the life of this agreement, deposit with the Treasurer selected by the parties hereto, the amount of fifty cents (50c) per acre for the number of acres of each party as above designated, said deposit to be used by the Treasurer to pay power costs as they become due, and that said Treasurer is authorized to demand and collect further charges for power in the operation of said unit as the same are assessed or become payable during the irrigation season, and it is agreed, that if any of the parties hereto should default in the payment of any such assessments and demands made for power furnished as aforesaid, for a period of ten (10) days, a penalty of ten per cent (10%) on such amount shall be immediately added to such charge or assessment, and in addition thereto the water being received by such party shall be shut off and such party shall not be served with water until such power charge and said 10% penalty is paid, and provided further that if such party remains in default in the payment of such power charge, assessment or assessments and penalty for a period of six (6) months after the first default, that thereupon the balance of the other parties hereto shall assume and pay the total amount for which said party is in default to the Treasurer, and upon such payment the said other parties hereto shall become vested with all right, title and interest of such defaulting party in and to said pumping unit, machinery and equipment, and the said defaulting party shall thereupon forfeit all his interest in said pumping unit and equipment, and it is agreed that in such event each of the remaining parties hereto shall pay the proportionate part owing by such defaulting party, in accordance with the proportionate share which the number of acres of the parties hereto bears to the total acreage as above set forth;

IT IS FURTHER AGREED, that all of the parties hereto, except the said John Baringer and Fred H. Baringer, shall share in accordance with their respective acreages as above

set forth, in the cost of electrician's time and required supplies to connect said motor to the power line, the said John Baringer and Fred H. Baringer being relieved from said particular cost in consideration of their having contributed the use of the pump site owned by them for the life of this agreement, for the installation of such pumping unit and equipment.

IT IS FURTHER AGREED, that each of the parties hereto shall pay that proportion of the total power cost that the amount of water used by each of the parties hereto bears to the total amount of water pumped by said unit, the amount and proportion of water used by each of the parties hereto to be determined by a majority in number of the parties to this agreement, or by some member to be selected by the unanimous agreement of all the parties hereto;

IT IS MUTUALLY AGREED by and between the parties hereto, that John Baringer shall, until unanimously agreed otherwise, act as Treasurer to represent the undersigned with the power company furnishing electric current for power to irrigate the combined acreage hereinabove mentioned.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals, the day and year in this agreement first above written.

(SEAL)

John F. Baringer
Arthur Kamhoot
Fred H. Baringer
Carl L. Lockard, By Fred H. Baringer, Agt.
Soren Nielsen
Carl B. Calvin

AGREEMENT

THIS SECOND AGREEMENT, made and entered into this 1st day of February, 1946, by and between Fred H. Baringer and John Baringer of Hathaway, Rosebud County, Montana, the Parties of the First Part, hereinafter designated as the Lessors, and Carl B. Calvin of Miles City, Custer County, Montana, and Soren Nielsen of Hathaway, Rosebud County, Montana, the Parties of the Second Part, hereinafter designated as the Lessees:

WITNESSETH; That,

WHEREAS, the Lessors are the owners of certain irrigation canals and ditches used to divert water from the Yellowstone River at a point along the right bank thereof in the S½ of Section 17, in Township 6 North, of Range 44 East, and which said canals traverse over and across the South part of Section 17, and onto and over and across Section 16, in Township 6 North, of Range 44 East: and,

WHEREAS, the Lessees are the owners of certain lands in the SE¼ of Section 9, the S½ of Section 10 and Section 15, in Township 6 North, of Range 44 East, which can be irrigated by the use of said main ditches and canals of the lessors; and,

WHEREAS, it is agreeable to the Lessors that the Lessees shall be permitted to have the use of said main ditches and canals of the Lessors for the purpose of carrying water from the Yellowstone River to the above described lands of the Lessees for irrigation purposes, and it is the desire of the Lessees to use said main ditches and canals of the Lessors for such purpose;

NOW, THEREFORE, in consideration of the covenants and agreements herein contained, and the mutual benefits to be derived by both of the parties hereto, the Lessors hereby give to the Lessees the privilege and right of using the said main irrigation ditches and canals of the Lessors as the same are now laid out, located and constructed, for the purpose of carrying water from the Yellowstone River across and over the lands of the Lessors situated in Sections 17 and 16, in Township 6 North, of Range 44 East, and onto and over the lands of the Lessees situated in the SE¼ of Section 9, the S½ of Section 10 and Section 15, in Township 6 North, of Range 44 East, for the purpose of irrigating said lands of the Lessees, and it is agreed that the right to use said main ditches and canals aforesaid, shall extend for a period of one (1) year from the date hereof, and shall cover the entire irrigation season of the year 1946; and,

IT IS AGREED, that in consideration of the use of said main ditches and canals of Lessors as aforesaid, the Lessees agree during the period aforesaid to properly clean out, repair and keep and maintain in a serviceable condition and free from all obstructions, the said main ditches and canals as the same traverse over a portion of Section 17 and Section 16, in Township 6 North, of Range 44 East, as above described, and shall keep said main ditches and canals in a good state of repair during the term hereof at the sole expense of the Lessees;

IT IS UNDERSTOOD AND AGREED, that the Lessors are merely granting to the Lessees the right and privilege of using Lessor's canals as aforesaid during the term hereof, for the purposes aforesaid, and that Lessees are not by this agreement being given any property interest or easement in and to the ditches and canals of the Lessors above described;

IT IS MUTUALLY AGREED, that the rights herein granted the Lessees shall not be assigned without the written consent of the Lessors;

IT IS MUTUALLY AGREED, that upon the full and satisfactory performance by the Lessees of each and all of the covenents and conditions of this agreement during the term hereof as above set forth, that this agreement and all the rights and privileges extended thereby by the Lessors to the Lessees may be renewed and extended for an additional year or years hereafter;

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals the day and year first above written.

Fred H. Baringer
(SEAL) John F. Baringer
Lessors

Carl B. Calvin
(SEAL) Soren Nielsen
Lessees

In 1948 the Association purchased an additional pump and electric motor of the same design and capacity as the one now in use. This pump will be located in the same location and will enable the Association to place more land under irrigation. As of July 1, 1948 the Association had received the pump but the electric motor had not arrived. The total cost of the pump and motor was $2,500.00, which was paid for by special assessment. The cost of water per irrigated acre is divided into two categories. For those users producing sugar beets the charge is $1.00 per acre and for all other crops 50 cents per acre. As most of the system repairs are done by the users this charge is, for the greater part, to pay for electricty used.

The project is part of the Cartersville-Thurlow Soil Conservation District, and as a result has received engineering aid for its land leveling program from the District. About $15,000.00 has been spent for land leveling by the various farmers in the project. The cost per acre has averaged from $30.00 to $70.00 per acre, depending on the condition of the land to be leveled. Users report that leveling has been more than paid for by increased crop yields. The principal crops are sugar beets and small grains, with some alfalfa grown for hay and seed. Some livestock are kept on most farms with surplus feed, such as beet tops, being sold to local ranch operators.

The project is located immediately east of Hathaway in the Yellowstone River Valley. The topography is favorable to irrigation and the soils are considered to be very productive. The main line of the Northern Pacific Railway and U. S. Highway No. 10 and 12 traverse the project.

In 1947 there were 939.00 irrigated acres under the Baringer Pump Project, with a potential irrigable acreage under existing facilities of 216.00 acres, or a maximum irrigable acreage of 1,155.00 acres. In 1948, by ditch extension and land leveling, 268.00 additional acres were placed under irrigation. Of these acres 195.00 acres were under new ditch on lands that were formerly irrigated by flood irrigation only. There are about 400 acres of new land that could be placed under irrigation if the system were expanded. To irrigate these acres an additional pump would be required, with a lift of approximately 18 feet, in order to reach the high point of land on the south side of the right-of-way. This land is now irrigated by flood irrigation only. A ditch system has been constructed with the intent to pump water for about 80.00 acres of this land from the Baringer system in the east half of Section 20, but the system was not in operation in 1947.

CARTERSVILLE IRRIGATION DISTRICT

The first irrigation system on the lands now occupied by the Cartersville Irrigation District was started by John E. Edwards. On April 17, 1903 he filed a notice of appropriation for 30,000 cubic inches of water (elsewhere described as 30,000 miner's inches) to be diverted from the Yellowstone River in Lot 2 of Section 14, Township 6 North, Range 40 East. Water from this point was to be diverted into a slough. The point of diversion from the slough was given as in the northwest quarter of Section 7, Township 6 North, Range 41 East. The purpose was for irrigation and other useful purposes. The system was described as a dam, ditch and slough; said ditch to be 16 feet wide on the bottom, 22

feet wide on top and from 5 to 15 feet deep. The land description of intended place of use was described as lands in the Little Porcupine Bottom. The notice of appropriation is on file in Book I, Page 352 of Water Right Records in the Rosebud County Courthouse.

The construction of the canal was begun in July, 1903 and was completed in May, 1904. Water was turned into the canal on May 22, 1904.

On April 11, 1904 John E. Edwards associated with George D. Beattie and Peter Larson to form the Rosebud Land and Improvement Company. The Company was incorporated for $250,000.00 for forty years, with a capital stock of 2,500 shares of a par value of $100.00 each. Stock actually subscribed to at the time of incorporation was $1,000.00. The Company continued to operate the project until the creation of the Cartersville Irrigation District. In about 1936 the Company dissolved. On July 16, 1909 the Cartersville Irrigation District was created in the District Court of the Thirteenth Judicial District in accordance with the provisions of an Act of the Legislative Assembly of the State of Montana, approved March 19, 1909, entitled "An act to provide for the creation, organization, government and extention of irrigation districts."

Soon after the time of creation the District issued bonds in the amount of $335,000.00. The whole issue was turned over to the Rosebud Land and Improvement Company in payment for the canal system and all water rights held by the Company. The Company made one reservation allowing them to pump surplus water from the slough to their lands free from any obligation to the District. In 1931, 1932 and 1933 the flow of the Yellowstone River was so low that no water was available at the intake to the slough after high water by gravity. To supply water to the District it was necessary to install pumps. In order to insure ample water, a dam was constructed across the Yellowstone River in 1934.

So, since the time of contract with the Company, the picture has changed and the District now maintains that after flood water there is no longer surplus water in the slough available for the contract reservation, but only the water that is diverted into it by the District by means of a dam and headgate. This, no doubt, will be a matter for legal determination at some future date.

During the first World War, in about 1918, through negotiations with the bondholders, $15,000.00 worth of bonds were canceled from the original debt.

In 1926 the District irrigable lands were re-classified, and as a result the assessed acreage was changed from 12,387.63 acres to 8,043.58 acres. After the re-classification in 1927 the Court authorized a refunding bond issue, but the District never made the issue. No monies were paid by the District on the original bonds up to 1934. The total indebtedness of the District in 1934 was $320,000.00. Through a compromise between the bondholders holding $316,000.00 of bonds and the District, this amount was reduced to $157,996.84. The District obtained a loan from the R. F. C. for this amount to pay off the bondholders. All of the original bonds were paid off except bonds in the amount of $4,000.00. These bonds were later forced in by Federal Court proceedings on the basis of .49999 cents on the dollar. The original bonds are held by the R. F. C. as collateral. Having this transaction completed the District applied to the R. F. C. for a loan of$35,000.00 to rehabilitate the project and

construct a dam across the Yellowstone River at the point of diversion. The loan was granted. In 1936 the south end of the dam washed out as a result of high water, and to repair this damage the R. F. C. granted the District a loan of $22,000.00 In addition to these loans, two smaller loans were made by the R. F. C. to the District for bond purchase and legal expenses. The first of these was made in 1935 for the amount of $2,503.16, and the second in 1939 for $1,999.95. All of these loans from the R. F. C. are being paid off on an amortized plan at 4 per cent interest on all unpaid balances. The total amount is to be paid in a period of 29 years beginning with the year 1939. The payments, including interest, will average about $12,500.00 per year. The District is now two years ahead on payments, and as of June 18, 1948 had a total outstanding indebtedness of $159,999.95 due the R. F. C.

In 1948 the District constructed a new syphon under Sand Creek at a cost of $13,000.00. In order to pay for this structure the sinking fund and principal and interest reserve fund levies were eliminated for one year with the consent of the R. F. C. As a result, no payments are being made to the R. F. C. in 1948.

The water charge per assessed irrigable acre for several years has been $3.20 per acre. Of this amount, in 1947, $1.10 was for operation and maintenance, $1.35 for construction, and 75 cents for interest. For those water users who pump from the main canal on lands not included in the District the water charge is based on operation and maintenance costs paid by users on bonded lands. This does not include the land previously mentioned having the free water right. For those who use District water by gravity systems outside the District the per acre charge is the same as on bonded lands. Monies received from the sale of water to non-bonded lands are credited to the maintenance fund.

The District diverts water by gravity from the Yellowstone River in the northeast quarter of Section 14, Township 6 North, Range 40 East into a slough. Water is carried in the slough for two and one-quarter miles to a point where the water is diverted into the main canal. From this point the main canal follows in an easterly direction on the north side of the Yellowstone River for about 21 miles.

The principal structures of the irrigation system are: a submerged dam across the Yellowsone River of pile, rock, brush and concrete construction; a primary headgate of concrete construction being located on the north end of the dam at the point of diversion into the slough; concrete spillgate and headgate at the canal intake from the slough; concrete rectangular syphons under Little Porcupine Creek and Horse Creek, and Lentz syphon under a coulee; McCurdy box type wood flume across a coulee; Sand Creek syphon and spillgate—syphon being constructed with one metal corrugated pipe 6 feet in diameter with concrete outlet and inlet, and concrete spillgate of sufficient capacity to take entire flow of canal; and concrete drop at the terminous of canal. In addition to these structures the District maintains additional spillways, canal checks, turnouts, and other structures. The canal system is in good repair with a large number of canal improvements having been made since 1939.

Since the construction of the dam the water supply has been considered adequate. The topography is favorable to irrigation and seepage has not been a serious factor. Much seep-

age that has occurred has been drained by private individuals. It has been reported by water users in the District that a certain amount of the present seepage is caused by culverts that are placed too high in the Milwaukee Railroad bed, thus not allowing all surplus water to pass on to the river.

The District is included in the Cartersville-Thurlow Soil Conservation District that was organized December 15, 1942, and as a result has received much technical assistance in developing the project.

The District is located on the north side of the Yellowstone River and extends from a point just north of Forsyth to a point about four miles east of Thurlow. It comprises a narrow strip of land averaging about two miles in width lying in the Yellowstone River Valley. The soil is considered very productive. It has been estimated that there are about 2,000 acres of additional grass land above the District main canal that could be irrigated by extending the irrigtion system. The principal crops are alfalfa, sugar beets, beans, and small grains. Corn is grown to some extent giving extremely high yields. Some dairy and beef cattle and swine are kept on most farms. Feed crops produced on the project in many cases are sold locally to cattle and sheep ranch operators in the area. Most farms maintain a flock of poultry and have a vegetable garden.

In 1947 there were 9,021.06 acres being irrigated under the Cartersville Irrigation District system, with a potential acreage under existing facilities of 1,463.86 acres, or a maximum irrigable acreage of 10,484.92 acres. These figures include all lands irrigated by the District system whether or not they are included in the District Proper.

HAMMOND IRRIGATION DISTRICT

The first attempt to irrigate lands now incorporated in the Hammond Irrigation District were made by resident land owners, such as E. E. Gould, who attempted to establish a private irrigation system in 1900. He and his brothers filed on 3,000 miner's inches of water to be diverted from the Yellowstone River to irrigate lands in Sections 8, 15, 16, 17 and 21, Township 6 North, Range 40 East. Like others, their plans failed to materialize.

Next to enter the irrigation development scene was T. E. Hammond, who was known as "The Acquisitor" because of his large land holdings. In 1909 Hammond, associated with James E. Rea and F. V. H. Collins, formed the Hammond Irrigation Company. "The purpose for which said corporation is created and formed is for the appropriation of the waters of the Yellowstone River, and the acquiring of the rights and the appropriations of appropriators thereof, by purchase or otherwise, and the diversion of said waters from the said river", etc. The Company was incorporated for forty years on June 15, 1909, with a capital stock of $50,000.00 divided into 5,000 shares of the par value of $10.00 each. Stock actually subscribed to at the time of incorporation was $1,000.00.

On February 24, 1912 the Hammond Irrigation Company filed a notice of appropriation for 250 cubic feet of water to be diverted from the Yellowstone River.

The point of diversion was described as a point in the south half of Section 7, Township 6 North, Range 40 East. The system was described as a dam across a slough of the Yellowstone River and a ditch. The land description of intended place of use was described as lands in lots 4, 5, 6 and 7, the NE¼SE¼ of Section 7, all of Section 8 lying north of the Yellowstone River, the E½SE¼, SE¼SE¼, and the SW¼SE¼ of Section 5, and all of Sections 9, 10, 11 and 12, all in Township 6 North, Range 40 East.

The notice of appropriation is on file in the Rosebud County Courthouse in Book 2, Page 302 of Water Right Records.

At one time the Company owned most of the land in the project. During its active existence the Company constructed the main canal and what is called the "High Ditch". The main canal was a gravity ditch with the point of diversion in the location of the present pumping plant. The "High Ditch" was constructed above the main canal with its point of diversion about 200 yards west of the main canal diversion. The Company intended to pump water into the "High Ditch" but went bankrupt before it could put the pump which they had bought into operation. Because of the lack of capital to meet outstanding debts the Company later dissolved. In order to reclaim the irrigation system of the Hammond Irrigation Company the people in the area created the Hammond Irrigation District.

The District was established and organized by a decree of the District Court of the Fifteenth Judicial District of the State of Montana on the 28th day of May, 1920. On June 25, 1921 the Court made an amended decree because, " in the preparation and drawing of the original decree, establishing and organizing the District, an error and mistake was inadvertently made in describing and bounding certain tracts of land and in setting forth the exact description of said tracts of land included within and comprising the District, and in computing the actual area and acreage thereof, and that said original decree did not set forth clearly, accurately and definitely the full intent and purpose of the court in establishing said Irrigation District, and the exact and accurate area of all of the lands included therein, and the true and exact acreage thereof". As a result of the amended decree the irrigable acreage in the District was determined to be 4,080.40 acres.

On January 12, 1921 bonds in the amount of $70,000.00 were issued, of which $40,000.00 was to be paid to the Hammond Irrigation Company for the canal system and water rights.

On July 1, 1927 the District was refinanced and this amount was reduced to $40,000.00, which was covered by a refunding issue bearing longer maturity. To rehabilitate the District subsequent refunding bond issues were made—$27,000.00 on September, 1927, $17,000.00 on August, 1928 and $17,000.00 on June, 1929. In 1938 the District applied to the R. F. C. for a loan to rehabilitate the project. Pertaining to the loan the following resolution was adopted: The R. F. C. has heretofore authorized a loan of not exceeding $61,000.00 to or for the benefit of the Hammond Irrigation District pursuant to Section 36, Part 4 of the Emergency Farm Mortgage Act of 1938 as amended; and the R. F. C. has disbursed $54,666.38 of or from such loan such unpaid principal amount hereinafter called "loan", and whereas as security for and evidence of loan R. F. C. now holds $3,297.90 principal amount of warrants of the District, and $91,000.00 aggregate

principal amount of bonds and appurtenant coupons of District as follows: $36,000.00 principal amount of such bonds being of the issue date July 1, 1927 in denominations of $500.00 each, bearing interest at the rate of six per cent per annum, payable semi-annually on January 1 and July 1 in each year, $26,000.00 principal amount of such bonds being of the issue date of September 1, 1927 in the denominations of $1,000.00 each, bearing interest at the rate of six per cent per annum, $12,000.00 principal amount of such bonds being of the issue date of August 1, 1928 in denominations of $1,000.00 each, bearing interest at the rate of six per cent per annum, $17,000.00 principal amount of such bonds being of the issue date of June 1, 1929 in denominations of $1,000.00 each, bearing interest at the rate of six per cent per annum.

Before disbursement of the loan it was agreed by the District and the R. F. C. that ultimately the loan would be evidenced by four per cent refunding bonds of the District, the principal maturing serially over a period of approximately thirty years. On June 30, 1938 the loan was granted the District by the R. F. C. in the amount of $54,666.38. All bonds are held by the R. F. C. as security on their loan. The loan is being paid on amortized plan at the rate of four per cent interest on all unpaid balances. As of June 18, 1948 the District was two years ahead on payments to the R. F. C. and had reduced the loan to $40,990.00. In addition to the monies paid the R. F. C. the District has paid off $8,300.00 in warrants plus interest.

The average cost of water per assessed irrigable acre is $3.50 per acre. Of this amount $2.50 is for operation and maintenance, and $1.00 for R. F. C. loan, of which 50 cents is on interest and 50 cents on principal. Operation and maintenance charges will be increased 20 cents an acre for the season of 1948 due to higher diesel fuel cost. In 1946 the costs for the operation of the District were as follows: Operation of pumping plant $3,776.08, maintenance and operation of canal $3,357.00, and administration expense $652.92, making a total of $7,786.00 for operation and maintenance; debt reduction and interest $2,785.00, making a total of $10,571.00 to operate the project for that year.

There are thirty farms in the District, of which twenty-seven receive water. There are 3,300 assessed acres in the District, of which 200 acres do not pay operation and maintenance charges because water is not delivered to this land. There is one user who pumps water from the District canal onto lands outside the District proper. This user pays a flat charge of $2.00 an acre.

At the point of diversion in the southeast quarter of Section 12, Township 6 North, Range 38 East the District maintains three Fairbanks-Morse diesel operated pumps. One is a 42 inch syphon type pump operated by an 80 horse power two cylinder diesel power engine, the second is a 12 inch syphon type operated by a 60 horse power one cylinder diesel power engine, and the third is an 8 inch centrifugal type operated by a 15 horse power one cylinder diesel power engine. There are three separate lifts, one a 12 foot and two 25 foot lifts. The capacity of the pumps are below maximum and do not supply an adequate supply of water to the District. Plans have been made to purchase new pumps and change from diesel to electric operated pumps; however, water users are not in full agreement as to this change over. The pump house is in poor repair because of flood and ice damage. It needs new

concrete abutments in order to sustain future flood and ice jams. In addition to the main District pumps there are seven private pumps operated by individuals on the project.

From the point of diversion the main canal to its terminous is about 11½ miles in length. It needs cleaning and is a "dead ditch" for about three miles. The water users have a plan of constructing a new canal higher up on the slope, about half-way between the present main canal and the High Line canal. This, they believe, would give a better flow of water and help alleviate the present water shortage that is experienced under the present system. Not all of the members in the District favor this plan as some believe cleaning the present canal would help the present situation.

The High Line canal is about 3¼ miles in length, with only the first mile in use. There are two syphons in the canal system, one a concrete structure four feet in diameter and 100 feet long under Porcupine Creek, and the other a wooden box type structure 40 inches square supported by concrete sub-structures 120 feet long over Greasewood Creek.

The topography is favorable to irrigation. Some seepage has occurred but is not a serious problem. No drainage district is incorporated in the District, and the drainage that has been accomplished has been done by private individuals. The District is part of the Cartersville-Thurlow Soil Conservation District, which has contributed much technical assistance in development plans.

The project is located on the north side of the Yellowstone River, commencing ten miles west of Forsyth and terminating just north of said town.

The principal crops are alfalfa, sugar beets, beans and small grains. Some dairy and beef cattle are kept on most farms. The system of farming is largely diversified with feed crops being fed to stock from adjoining ranches or owned by the individual farmer.

In 1947 there were 2,934.10 acres being irrigated under the Hammond Irrigation District, with a potential acreage under existing works of 397.90 acres, or a maximum irrigable acreage of 3,332.00 acres. These figures include the land irrigated by pump outside of the District proper.

YELLOWSTONE IRRIGATION DISTRICT

In 1906 the Sanders-Howard Co-operative Ditch Company endeavored to irrigate the lands now occupied by the Yellowstone Irrigation District. The Company, on October 11, 1906, filed a notice of appropriation for 40,000 miner's inches of water to be diverted from the Yellowstone River in Lot 2 of Section 23, Township 6 North, Range 35 East. The date appropriated was given as October 10, 1906. The purpose was for domestic, agricultural, and other useful purposes. The system was described as a headgate of rock and concrete. The land description of intended place of use was given as a tract of land on the south side of the Yellowstone River between Meyers Station on the Northern Pacific Railway and Armells Creek, in Townships 6 and 7 North of Ranges 36, 37, 38 and 39 East,

containing approximately 30,000 acres. The notice of appropriation is on file in Book 1, Page 523 of Water Right Records, in the Rosebud County Courthouse.

The time of existence for the Company was short, and on August 3, 1907 the Sanders Co-operative Ditch Company was formed by Fred D. Herbold, James R. Thompson and John C. Lyndes. Said Company was incorported under the laws of the State of Montana for $50,000.00, divided into 5,000 shares of a par value of $10.00 each. The stock was non-assessable. The corporation was formed to appropriate water, secure right-of-way, collect monies, and construct an irrigation system.

On December 13, 1907 the Sanders Co-operative Ditch Company filed on 1,000 cubic feet of water to be diverted from the Yellowstone River in Lot 8 of Section 11, Township 6 North, Range 35 East. The date appropriated was given as December 12, 1907. The purpose was to be for domestic, agricultural, manufacturing, and other useful purposes. The system was described as a headgate 32 feet wide and 14 feet high, marking place of commencement of canal. From this point the canal was to follow the Yellowstone River in an easterly direction for approximately 30 miles. The place of intended use was described as a tract of land situated on the south side of the Yellowstone River, under the line of that certain irrigating ditch or canal now being constructed by the Sanders Co-operative Ditch Company between Hysham Station on the Northern Pacific Railway and Armells Creek. Said tract of land was situated in Townships 6 and 7, North of Ranges 36, 37, 38, and 39 East, containing approximately 20,000 acres. This appropriation is on file in Book I, Page 592 of Water Right Records in the Rosebud County Courthouse. The same notice of appropriation is filed in the Treasure County Courthouse in Book 1, Page 37 of Water Right Records. The appropriation is identical, except that the date of appropriation is given as September 2, 1907. This date of priority is the date accepted by the Yellowstone Irrigation District.

On June 11, 1909 the Yellowstone Irrigation District was created in accordance with and pursuant to the provisions of Chapter 146 of the Acts of the Eleventh Legislative Assembly of the State of Montana in the District Court of the Thirteenth Judicial District. On January 1, 1910 a bond issue of $250,000.00 was authorized and sold. Of this amount $75,210.00 was paid to the Sanders Co-operative Ditch Company for their interest, canal right-of-way, and all water rights from the Yellowstone River. The deed transferring said rights from the Company to the District was dated July 5, 1910.

On January 1, 1918 a second bond issue for $150,000.00 was authorized and sold. This issue was made because a washout in the headworks of the canal system made it necessary for the District to change the first few miles of canal. A new steel flume was also constructed around Sanders Hill. In 1928 the bondholders agreed to a readjustment with the District, leaving a total indebtedness of $350,000.00. In 1934 the total indebtedness was $313,000.00, but through a compromise between the District and bondholders this amount was reduced to $177,500.00. For this amount a loan was granted by the R. F. C. No refunding bonds were issued and the loan is to be paid on the basis of $3,500.00 on principal, plus interest of 4 per cent per year on all unpaid balances. To date the District has paid more than this amount per year. As of June 4, 1948 the unpaid balance on the R. F. C. loan was $110,513.59. In 1948, $20,143.70 worth of warrants were sold to pay for the construction of a new concrete lined canal around Sanders Hill. These warrants bear

interest at the rate of 4 per cent from the date of registration, and are to be paid from assessments in the next two years. As of June 4, 1948 the District had on hand $4,-717.14 in the bond and interest fund, and $5,541.32 in the reserve fund for bond payments. This fund is maintained in accordance with an agreement made by the District and the R. F. C. There was $5,693.50 in the operation and maintenance fund and $1,692.39 in the repair fund. This latter amount will be applied to the $20,143.70 for warrants outstanding that are to be paid by assessments. Assessments for the past three years have been $4.00 per assessed irrigable acre. Of this amount $1.75 has been applied to the R. F. C. loan and $1.25 paid to the repair fund. There are 6,271.07 assessed acres in the District, with 3,288.75 acres in Treasure County and 2,982.32 acres in Rosebud County. In addition to the assessed acres the District charges a flat fee of $1.50 per acre for those users who pump out of the main canal to lands not originally classified as assessable when the District was created.

The District is divided into two Soil Conservation Districts. The Cartersville-Thurlow District organized Dec. 15, 1942 in Rosebud County, and the Treasure County District organized March 5, 1947 in Treasure County. As a result of the technical assistance given the District by these Soil Conservation Districts much progress has been made in development work, such as canal relocation, drainage, land leveling, etc. Because of these improvements the District is re-classifying its irrigable acreage in the District. This is no doubt justified, as the results of our survey show that the District assessed acreage is below that of our present irrigated acreage in Rosebud County. In addition to regular assessments the District receives $600.00 per year from the Box Elder Irrigation District for the right to convey its water through the District system. The Box Elder Irrigation District is operated as a separate District and has no connection with the Yellowstone Irrigation District.

The Box Elder Irrigation District, on January 10, 1920, appropriated and filed on 5,000 miner's inches of water to be diverted from the Yellowstone River at said point as set forth in the appropriation made by the Hysham Co-operative Ditch Company, and described therein as being on the east bank of the Yellowstone River in Lot 2 of Section 13, Township 6 North, Range 35 East, which was changed to Lot 9 of Section 11, in said Township and Range, a distance of about one-half mile down the river to the headgate of the Yellowstone Irrigation District. Thence said water thus heretofore appropriated and used upon the lands herein set forth is to be conveyed by gravity through the Yellowstone Irrigation District canal to a point in Section 9, Township 6 North, Range 36 East, a distance of 31,500 feet to the intake ditch of the Box Elder Irrigation District, thence through this canal a distance of 800 feet to the pumphouse, and from this point raised to a sufficient height by two twenty-inch centrifugal pumps and the water discharged into ditches which will irrigate these same lands as heretofore irrigated by the Hysham Co-operative Ditch Company. It was also stipulated that the Box Elder Irrigation District has acquired by purchase the water right filed by the Hysham Co-operative Ditch Company, dated December 6, 1907.

The notice of appropriation for the Box Elder Irrigation District is on file in Book I, Page 155 of Water Right Records in the Treasure County Courthouse. On December 21, 1907 the Hysham Co-operative Ditch Company filed on 5,000 miner's inches of water to be diverted from the Yellowstone River. The date of first use was December 6, 1907. The notice of appropriation is on file in Book 1, Page 596 of Water Right Records in the Rosebud

County Courthouse, and in Book 1, Page 38 of Water Right Records in the Treasure County Courthouse.

The first five and one-half miles of the Yellowstone Irrigation District canal is at present used jointly by the two Districts, with sufficient carrying capacity to take care of the water needs of both. At a point one-half mile east of the town of Hysham, the Box Elder Irrigation District maintains a forebay diversion canal one-quarter of a mile long from the Yellowstone Irrigation District canal to a pumping plant. This plant maintains two vertical mixed flow propeller type pumps operated by 100 and 60 horse power electric motors, respectively. Water is lifted through two pipes about 20 feet into the main Box Elder Irrigation District canal. The original pump site, as mentioned in the appropriation, has been moved about 100 feet closer to the main canal, and the old pumps have been replaced with new pumps. Approximately 700 acres are irrigated by this system. The Box Elder Irrigation District was created in 1919 and the original bond issue was for $65,000.00. As the District is not located in Rosebud County its mention in this report is only to show its relationship to the Yellowstone Irrigation District, and therefore is not to be considered as a final write-up.

In 1932 the Yellowstone Irrigation District constructed a rock filled submerged diversion dam across the Yellowstone River in the SE¼ of Section 11, Township 6 North, Range 35 East. At the east end of the dam the District maintains a reinforced concrete headgate with five screw type gates, with an estimated capacity of about 400 cubic feet. The canal at the headgate is about 40 feet wide. From this point the main canal follows an easterly direction for about 28 miles on the south side of the Yellowstone River to Armells Creek. At the terminus the canal is about 4 feet wide. In addition to the headworks the principal structures are rectangular concrete syphons under Sarpy, Hay, and Reservation Creeks and Wyant Coulee. In 1948 the District relocated its main canal around Sanders Hill, replacing the old metal flume with a concrete lined canal. By doing this the water shortage experienced by users on the lower end of the canal has been somewhat alleviated. The main canal for the greater part is in fair condition, but users claim it should be enlarged in order to carry enough water to meet the water demands during the peak of the irrigation season. As it is a hillside ditch for the greater part of its length, much seepage has occurred as a result of ditch leakage. Considerable drainage work has been accomplished by individual farmers, but no drainage district has been established.

The topography is favorable to irrigation. Water is taken by gravity from the Yellowstone River, and since the construction of the diversion dam the water supply is considered adequate during normal irrigation seasons.

The principal crops are alfalfa, sugar beets, beans and small grains. Considerable livestock is kept on the project, with surplus feed being sold to stockmen who bring their stock into the valley to winter. Some dairy cattle and hogs are kept on most farms to supply home and local needs. Nearly all of the farms maintain a flock of poultry and have a garden for the production of small fruits and vegetables for home use.

The project is located in Rosebud and Treasure Counties on the south side of the Yel-

lowstone River, and extends from a point three miles west of Hysham, the County Seat of Treasure County, to Armells Creek in Rosebud County.

In 1947 there were 3,527.48 acres being irrigated under the Yellowstone Irrigation District in Rosebud County, with a potential acreage under existing facilities of 1,794.26 acres, or a maximum irrigable acreage of 5,321.74 acres. These figures include lands irrigated by pumping out of the main canal. Most of the potential acreage has been put out of production because of seepage.